

REMARKS

Upon entry of the present Amendment-B the claims in the application are claims 1-19, of which claims 1, 3 and 15 are independent, and of which claims 3, 6-7, 9 and 12 are withdrawn from consideration. New claims 13-19 are directed to the elected invention.

Claims 1 and 2 are amended herein to addresses issues of indefiniteness and to correct informalities. New claims 13-19 are added herein. The applicant respectfully submits that all of the amendments are fully supported by the original application, including Figs. 1-4(c). The applicant also respectfully submits that the above amendments do not introduce any new matter into the application.

The above-identified Office Action has been reviewed, the references carefully considered, and the Examiner's comments carefully weighed. In view thereof, the present Amendment is submitted. It is contended that by the present amendment, all bases of rejection set forth in the Office Action have been traversed and overcome. Accordingly, reconsideration and withdrawal of the rejection is respectfully requested.

Election/Restrictions

On page 2 of the Office Action, the Examiner acknowledged the applicant's response to the Election/Restriction requirement of 15 May 2006, and has made the restriction FINAL. Although the Examiner was not persuaded to withdraw the restriction requirement, the Examiner did concede that claims 1-2, 4-5, 8 and 10-11 are generic and should have been deemed generic in the restriction requirement.

Claim Rejections –35 USC 112

On page 3 of the Office Action, the Examiner rejected claims 1-2, 4-5, 8 and 10-11 under 35 USC 112, second paragraph as being indefinite. In particular, in claim 1, which recites “a longitudinal axis of the brush is parallel to said slit-like discharge opening”, the Examiner finds that

the nozzle and its slit-like opening are not positively claimed, since the applicant is only claiming the apparatus to clean a nozzle rather than both the nozzle and cleaning apparatus.

The applicant has amended claim 1 to encompass the combination of a nozzle and cleaning apparatus for the nozzle, positively reciting structural limitations that are recited in relation to the nozzle, whereby the claim is made definite. By the above amendments to claim 1, the rejection under 35 USC 112 is believed to be overcome and it is respectfully requested that the rejection be reconsidered and withdrawn.

Claim Rejections – 35 USC 103

On page 4 of the Office Action, the Examiner rejected claims 1 and 8 under 35 USC 103(a) as being unpatentable over Zehner (US Patent App. Pub. 2003/0127046 A1) et al. in view of Eriksson (US 6,321,688). In the rejection, the Examiner states that Zehner discloses a cleaning apparatus for a paint spray gun nozzle, the apparatus comprising a cleaning tank 12 containing a cleaning liquid 64, a cylindrical brush 52 disposed in the liquid for cleaning a nozzle, the brush being rotatable about a longitudinal axis (para. 16). The Examiner further states that Zehner fails to teach that the brush can be reciprocated horizontally and vertically, and mechanisms that allow for this movement, but that Eriksson teaches a cleaning apparatus having a longitudinal brush 29 that reciprocates vertically and horizontally (Fig 3c, 3d), a swinging arm 59' for moving the brush horizontally, and an extension arm 81 for moving the brush vertically. The Examiner considers it obvious to modify Zehner's brush to reciprocate vertically and horizontally as taught by Eriksson since such movement ensures that the entire tip and sides of the paint spray gun nozzle will be cleaned without spreading contamination (Eriksson col. 2, lines 23-44).

Applicant's Response

Upon review of Zehner, the applicant finds that Zehner discloses a paint spray gun cleaner for cleaning a spray gun nozzle 108 mounted on a robotic arm 96. The cleaner 10 includes a container 12 for containing solvent 64, the container including a lid 20 having an aperture 24 formed

therein. The cleaner also includes a rotating brush rotatably mounted within the container so as to extend substantially horizontally. The rotation of the brush is achieved by means of a motor 28, and the position thereof is fixed relative to the container. In use, the robotic arm inserts the nozzle through the aperture 24, and the tip of the nozzle contacts the rotating brush 52, whereby the nozzle 108 of the paint spray gun is cleaned.

Erikkson discloses a device 13 for cleaning the teat of an animal, the device 13 including a handle 23 to permit manual positioning of a housing 21 of the device with respect to a teat, the housing 21 supporting two parallel rotatable brushes 27, 29 therein. The brushes 27 are spaced apart and substantially parallel to a longitudinal axis of the housing 21. Brush 27 is non-displaceably attached to the housing, and coincides with a drive shaft 57 of a drive motor 51. Brush 29 pivots relative to brush 27 via a pivot arm 59, and is moveable, within a slot 63 formed in housing 21, between an upper position (Figs 2A-C, Fig. 3B) and a lower position (Fig. 3A, 3C).

The applicant respectfully disagrees with the rejections of claims 1 and 8 since it would not be obvious to use the teachings of a spray gun cleaner, as disclosed by Zehner, or the teachings of an animal teat cleaning device, as disclosed by Erikkson, for the purpose of analyzing the obviousness of an invention in the art of applying coating liquids to a semiconductor wafer, or in the art of cleaning a nozzle having a slit-like discharge, as claimed, because the inventive fields of paint spraying and animal care are completely disparate from, and are thus non-analogous to, the field of the applicant's endeavor.

In order to rely on a reference as a basis of rejection under 35 USC 103(a), the reference must either be in the field of the applicant's endeavor, or if not, be reasonably pertinent to the particular problem with which the inventor was concerned. A reference is considered to be "reasonably pertinent" if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention when considering his problem (MPEP 2141.01(a)).

The applicant does not consider the inventions of Zehner and Erikkson to be within the

field of the applicant's endeavor, since both paint spraying and animal cleaning are unrelated to application of coating liquids to semiconductor materials. Specifically, the applicant does not consider the inventions of Zehner and Eriksson to be reasonably pertinent to the problem with which the inventor is concerned. Although both of the cited references are directed to inventions having cleaning brushes, the applicant disagrees that a person of ordinary skill in the art of applying coating liquids to a semiconductor wafer, or in the art of cleaning a nozzle having a slit-like discharge as claimed, would reasonably be expected or motivated to look to the devices of Zehner, or especially Eriksson, during such consideration.

In particular, there is no motivation for the inventor of a cleaner for nozzle having a slit like discharge to look to the paint spray gun cleaning device of Zehner, when no such type of nozzle is disclosed therein. In addition, there is no motivation for the inventor of a cleaner for nozzle having a slit like discharge to look to a device for cleaning animal teats, since the structure and function of animal teats, and type of material to be removed from the teat, and the associated requirements for proper sanitation, are clearly different from that of the applicant's invention.

In addition, the applicant disagrees with the rejections of claims 1 and 8 since it would not be obvious to modify a spray gun cleaner, as disclosed by Zehner, by the teachings of Eriksson, who discloses an animal teat cleaning device because the inventive fields of paint spray and animal care are completely disparate and are thus non-analogous to each other, whereby the only motivation to combine these references is impermissible hindsight on the part of the Examiner. In this regard, the applicant disagrees that the motivation of contamination prevention, considered by the Examiner as a reason for making such a modification, is a relevant issue for a paint gun sprayer as disclosed by Zehner.

The applicant further disagrees with the rejections of claims 1 and 8 since it would not be obvious to modify a spray gun cleaner, as disclosed by Zehner, by the teachings of Eriksson, who discloses an animal teat cleaning device, because such a modification would render the invention of

Zehner inoperable for its intended use, whereby there is no suggestion or motivation to make the proposed modification. In particular, modification of Zehner's brush to permit vertical or horizontal movement would require that a slot be formed in the sidewall of the container 12 of Zehner, since Zehner teaches a closed container including four closed sides and a lid. Note that Eriksson shows a slot 63 formed in the housing 21 that extends downward and inward relative to the fixed brush 27, and the moveable brush 29 moves within the slot 63. However, by forming such a slot in the sidewall of the container 12 of Zehner, the solvent 64 would drain out of the container. Zehner specifically teaches that the solvent 64 should be provided at a solvent level 68 which is higher than the drive shaft 48 of the brush 52 (para. 17). In order to permit vertical and horizontal reciprocation of the brushes as taught by Eriksson, formation of slots in the container to accommodate the brush movement would result in the level of solvent in the container having an upper level below that of the axis of a brush in the lowest position.

At page 5 of the Office action, the Examiner rejected claim 2 under 35 USC 103(a) as being unpatentable over Zehner as applied to claim 1, and further in view of Tsutsumi et al (US 6,594,457). In the rejection, the Examiner states that Zehner teaches all the essential elements of claimed invention but fails to teach that the hair structure of the brush is arranged obliquely with respect to the longitudinal axis of the brush, and cites Tsutsumi as teaching a longitudinal brush with the bristles 211 arranged obliquely. The Examiner considers it obvious to modify Zehner's bristles so as to be obliquely arranged as taught by Tsutsumi to increase the life expectancy of the brush, to provide a more effective cleaning effect due to the slant of the bristles (Tsutsumi col. 8, lines 33-39).

Applicant's Response

Upon review of Tsutsumi, the applicant finds that the disclosure thereof is directed to a brush roll cleaning unit for removing residual toner, paper powder, etc. from the surfaces of a photoconductor drum or transfer body within a photocopier or laser printer. The brush roll 215 disclosed by Tsutsumi includes a conductive rotation shaft 212 covered in bristles 211. The bristles

211 are upright and inclined in a circumferential direction of the shaft, that is, inclined in the direction of rotation of the photoconductor drum. A cleaning bias is applied to the brush roll by applying a voltage, selected appropriately in response to the charge polarity of the toner to be captured, to the brush roll 215 to generate an electrostatic induction force (col. 4, lines 4-25, col. 8, lines 10-39).

The applicant respectfully disagrees with the rejection of claim 2 for the following reasons.

The applicant disagrees with the rejection of claim 2 for the reasons discussed above with respect to the rejection of claim 1 (in view of Zehner as modified by Eriksson), from which claim 2 depends.

The applicant further disagrees with the form of the rejection of claim 2, and considers this rejection is improper because it does not involve the Eriksson reference as applied in the rejection of claim 1, from which claim 2 depends.

In addition, the applicant disagrees with this rejection since it would not be obvious to use the teachings of a cleaning unit in a photocopier/laser printing device for the purpose of analyzing the obviousness of an invention in the art of applying coating liquids to a semiconductor wafer, or in the art of cleaning a nozzle having a slit-like discharge, as claimed, because the inventive fields of image formation using photocopiers/laser printing is completely disparate from, and are thus non-analogous to, the field of the applicant's endeavor.

Moreover, the invention of Tsutsumi is not reasonably pertinent to the problem with which the inventor is concerned. Although the cited reference is directed to an invention having cleaning brushes, the applicant disagrees that a person of ordinary skill in the art of applying coating liquids to a semiconductor wafer, or in the art of cleaning a nozzle having a slit-like discharge as claimed, would reasonably be expected or motivated to look to the devices of Tsutsumi during such consideration. In particular, removal of residual toner material from a transfer drum, as addressed by Tsutsumi is not remotely pertinent to cleaning a nozzle slit.

The applicant further disagrees that it would be obvious to further modify the paint spray gun

cleaner of Zehner to include the bristle arrangement of a cleaning brush in a photocopier because the inventive fields of paint spraying and photocopying are completely disparate and are thus non-analogous to each other, whereby the only motivation to combine these references is impermissible hindsight on the part of the Examiner.

The applicant also disagrees with the Examiner's contention that "the slant of the bristles will create an induction force caused by the cleaning bias". The Examiner appears to consider the slant of the bristles to cause an induction force to be generated. However, Tsutsumi clearly describes that a voltage is applied to the brush roll to create an electrostatic induction force to attract residual toner. The Examiner's position is contradicted by Tsutsumi's actual disclosure.

At page 5 of the Office action, the Examiner rejected claims 4 and 10 under 35 USC 103(a) as being unpatentable over Zehner as applied to claim 1, and further in view of Batchelder (US 2,164,443). In the rejection, the Examiner states that Zehner teaches all the essential elements of claimed invention but fails to teach a brush cleaning means or comb for scraping material off the long-length brush as it is rotated, and that Batchelder teaches a brush cleaning means 63 with teeth 66 adjacent a brush 22 with bristles. The Examiner considers it obvious to modify the cleaning apparatus of Zehner with a cleaning means such as a comb attached to the tank as taught by Batchelder so that the long-length brush will be kept clean.

Applicant's Response

Upon review of Batchelder, the applicant finds that the disclosure of Batchelder is directed to a textile drafting mechanism, and an improved means of removing lint, fibrous particles, and other extraneous matter from sets of rolls within a textile fabrication machine. Batchelder discloses a rotary horsehair brush 22 used to clean each of plural toothed Rooney rolls 13, and further discloses a means for removing fibrous particles from the brushes 22, the means comprising a strip of card-clothing 65 secured to the housing 60 at a location corresponding to the brushes 22. The card clothing 65 comprises plural wires or points 66 having turned ends (Fig. 1) which engage the bristles

of the brushes 22 so as to remove fibrous particles from the brushes.

The applicant respectfully disagrees with the rejection of claims 4 and 10 for the reasons discussed above with respect to the rejection of claim 1 (in view of Zehner as modified by Eriksson), from which both claims 4 and 10 depend.

Again, the applicant finds that the form of this rejection is generally improper because it does not involve the Eriksson reference applied in the rejection of claim 1 from which the rejected claims depend.

In addition, the applicant disagrees with this rejection since it would not be obvious to use the teachings of a textile drafting device as disclosed by Batchelder for the purpose of analyzing the obviousness of an invention in the art of applying coating liquids to a semiconductor wafer, or in the art of cleaning a nozzle having a slit-like discharge, as claimed, because the inventive fields of textile drafting is completely disparate from, and are thus non-analogous to, the field of the applicant's endeavor.

Moreover, the invention of Batchelder is not reasonably pertinent to the problem with which the inventor is concerned. Although the cited reference is directed to an invention having a means for cleaning a cleaning brush, the applicant disagrees that a person of ordinary skill in the art of applying coating liquids to a semiconductor wafer, or in the art of cleaning a nozzle having a slit-like discharge as claimed, would reasonably be expected or motivated to look to the fibrous material collecting device 65 of Batchelder during such consideration. In particular, using a card implement for removal of fibrous material from a cleaning brush for a fabric roller, as addressed by Batchelder is not remotely pertinent to cleaning coating residue from brush used to clean a nozzle slit.

In addition, the applicant disagrees that it would be obvious to further modify the paint spray gun cleaner of Zehner to include the cleaning means, such as a comb attached to the tank as taught by Batchelder, because the inventive fields of paint spraying and textile drafting are completely disparate and are thus non-analogous to each other, whereby the only motivation to combine these references is impermissible hindsight on the part of the Examiner.

At page 6 of the Office action, the Examiner rejected claims 5 and 11 under 35 USC 103(a) as being unpatentable over Zehner in view of Tsutsumi as applied to claim 2, and further in view of Batchelder. In the rejection, the Examiner states that Zehner in view of Tsutsumi teaches all the essential elements of claimed invention but fails to teach a brush cleaning means or comb for scraping material off the long length brush as it is rotated, and that Batchelder teaches a brush cleaning means 63 with teeth 66 adjacent to a brush 22 with bristles. The Examiner considers it obvious to modify the cleaning apparatus of Zehner as modified by Tsutsumi with a comb attached to a tank as taught by Batchelder so that the brush will be kept clean.

Applicant's Response

The applicant respectfully disagrees with the rejection of claims 5 and 11 since the form of this rejection is generally improper because it does not involve the Eriksson reference applied in the rejection of claim 1 from which the rejected claims depend.

In addition, the applicant respectfully disagrees with the rejection of these claims for the reasons state above with respect to the rejections of claims 1 and 2 as discussed above, from which both claims 5 and 11 depend. In this rejection, the Examiner combines the teachings of Zehner, (Eriksson,) Tsutsumi, and Batchelder to formulate an obviousness rejection in which all of the cited references are from a non-analogous art, as discussed above, and in which none of the cited references are analogous to each other, also as discussed above.

Other Matters

The applicant has added new claims 13 -19 herein.

New claim 13 is similar to claim 2, and further defines the oblique orientation of the bristles of the long-length brush. The claims configuration is clearly shown in Fig. 2b, whereby no new matter is added. The applicant submits that the bristle structure of Tsutsumi does not make obvious the bristle structure shown in the applicant's Figure 2b, in which the bristles are oblique to both the

longitudinal axis, and the circumferential direction, of the brush.

New independent claim 15 recites apparatus for cleaning a nozzle having a slit-like discharge opening which is similar to original claim 1, but wherein structural limitations that are recited in relation to the nozzle are clarified by indicating that the tank has an open upper end adapted to receive the lower end of the nozzle therein, and that reference to the nozzle apply when the lower end of the nozzle is received in an open upper end of the cleaning tank.

New claim 14 recites that the nozzle is adapted to discharge a coating solution onto a semiconductor wafer, and new claims 16-19 recite the same limitations as in claims 2, 4, 8 and 10, but the new claims depend from claim 15 rather than claim 1. No new matter is added.

CONCLUSION

Based on all of the foregoing, applicant respectfully submits that all of the objections and rejections set forth in the Office Action are overcome, and that as presently amended, all of the pending claims are believed to be allowable over all of the references of record, whether considered singly or in combination. The applicant requests reconsideration and withdrawal of the rejection of record, and allowance of the pending claims.

If the Examiner is not fully convinced of all of the claims now in the application, applicant respectfully requests that the Examiner telephonically contact the applicant's undersigned representative to expeditiously resolve prosecution of the application.

Favorable consideration is respectfully requested.

Respectfully submitted,



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